

## Microdriver 9, Short-Haul Modem-B, and Multipoint Line Driver



**Send your async data up to several miles from your computer equipment—without the expense of a modem.**

## FEATURES

- Send async data across short- and medium-range distances.
- Use existing in-house twisted-pair wiring to transmit data.
- Choose from a variety of data rates—as high as 115.2 kbps with the high-speed SHM-B.
- Most offered as cards for rackmounting.
- Models for multipoint applications available.
- Microdriver 9 can be ordered with surge protection.
- Choose nonpowered models for simple installation.

## OVERVIEW

If you want to transmit data from your computing equipment further than the 50-foot (15.2-m) RS-232 limit but don't need a modem (which can transmit data worldwide), then order a Microdriver 9, Short-Haul Modem-B, or RS-232/RS-485 Multipoint Line Driver.

These compact, easy-to-install datacommunication devices can exchange data within a building or across town. Higher data rates yield shorter distances. For details and distance/speed specifications for specific models, see the following pages.

What should you consider when choosing the model that's right for your application? First, determine whether you need a nonpowered or powered device.

The nonpowered models plug into the connector at the communications port of your DTE and derive their power from the port's interface (RS-232/ITU V.24) via one or more of the connector's pins. All Microdriver 9 models are powered this way.

Before choosing a specific nonpowered device, you'll need to confirm that your computing equipment has the pins needed to run the device. Then determine the gender of your computer's comm port connector and select a model with the proper connector gender.

Choose a powered device if your computer can't support nonpowered units and/or you prefer to rackmount equipment. Our Short-Haul Modem-B, High-Speed Short-Haul Modem-B, and RS-232/RS-485 Multipoint Line Drivers are all powered, requiring standard AC current to operate. They're available in standalone and rackmount card models. When choosing your model, consider your available installation space, the total units needed, and your existing equipment.

Next, determine if your system or software support is sending data in a point-to-point or multipoint installation. Except for the RS-232/RS-485 Multipoint Line Driver, all models featured here are designed to work point-to-point.

If you have a point-to-point network, you'll need a device that matches the type of wiring in your installation, whether it's in-house wiring for on-site applications or a 4-wire twisted-pair Local Area Data Circuit (LADC) leased from your phone company to send data off-site. In-house wiring will be either 2-or 4-wire twisted-pair cable that exists in your building or that you will install.

Lastly, determine the speed you want your data to travel, reviewing your computer's limitations to see if it supports high speeds, and the distance it must travel. You'll also need to consider how much room for error you can tolerate in data exchanges, what wire gauge(s) will be used, and how many splices will exist in the wire.

### Microdriver 9

- Nonpowered, point-to-point, 4-wire or 5-screw terminal block.
- Saves space—plugs into your PC's DB9 serial port.
- Sends data up to 17 miles (27.4 km) at 1200 bps using 24 AWG gauge wire.
- Models are available with RJ-11, RJ-45, or 5-screw terminal block connectors.

This compact short-range, asynchronous, point-to-point, full-duplex line driver plugs directly into your computer or terminal port, and all power is drawn from the RS-232 interface.

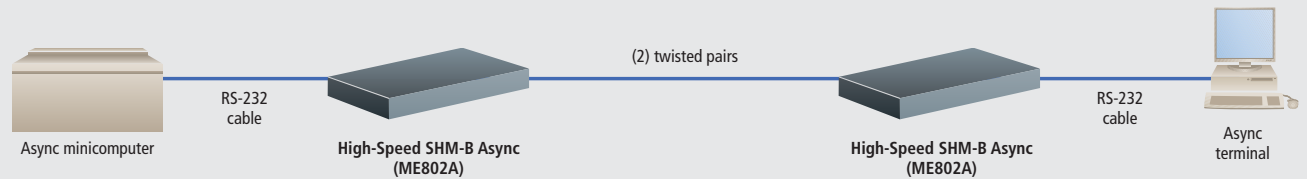
It's perfect for installations where there's no room to spare. Surface-mount technology makes the Microdriver 9's small size possible.

Used in pairs, the Microdriver 9 enables two asynchronous RS-232 devices with DB9 connectors to communicate at distances up to 17 miles (27.4 km) at 1200 bps over 24 AWG wiring.

Models available include:

- The Microdriver 9 RJ-11 (ME790A-M, ME790A-F, ME792A-MSP, ME792A-FSP) has a female RJ-11 connector to connect to the twisted-pair lines and a male or female DB9 connector to connect to your computer port. Surge-protected (SP) versions feature 600-watt power dissipation at 1 ms and a response time of 1.0 picoseconds.
- The Microdriver 9 RJ-45 (ME794A-M, ME1794A-F) has a female RJ-45 to connect to the twisted-pair lines and a male or female DB9 connector to connect to your computer port.
- The Microdriver 9 5-Screw Terminal Block (ME1791A-F) has a 5-screw terminal block to connect to the twisted-pair lines and a female DB9 connector to connect to your computer port.

*A typical application using the High-Speed SHM-B Async, a powered driver that's ideal for sending async data point-to-point at speeds up to 115.2 kbps.*



### Short-Haul Modem-B 2W-A (SHM-B 2W-A)

- Powered, point-to-point, 2-wire.
- A pair of these line drivers enables two RS-232 devices to communicate at distances up to 2.3 miles (3.7 km) at 2400 bps over 24 or 26 AWG.
- Fully supports hardware handshaking, so you get reliable performance during every data exchange.
- Two status LEDs monitor transmit and receive lines.
- Loopback circuitry helps you detect line faults via a front-panel button.

The SHM-B 2W-A is an asynchronous, full-duplex line driver and receiver that requires only two wires to transmit data.

A pair of these SHMs enables two RS-232 devices to communicate at distances of up to 2.3 miles (3.7 km) and at bit rates of up to 19.2 kbps, while fully supporting hardware handshaking.

The SHM-B 2W-A operates over a two-wire metallic circuit. Optimum performance is obtained with 22 to 26 AWG twisted-pair telephone cable, but you can use nearly any twisted-pair cable, with little or no performance degradation.

In addition to the transmitter and receiver circuits, the modem includes RS-232 control-line interfaces, status monitor LEDs, and a loopback switch.

A powered device, the SHM-B 2W-A is available in stand-alone 115-VAC (ME755A) or 230-VAC (ME755AE) versions and as a card version (ME755-C) for mounting in our 8- or 16-Card Short-Haul Modem-B Rack.

### Short-Haul Modem-B (SHM-B) Async

- Ideal for most any point-to-point, 4-wire, full-duplex application.
- Equipped with a balanced loop interface and optical isolation circuitry, providing protection from differences in ground potential between areas.

- Local analog loopback circuitry lets you check the operation of both your local and remote units.
- Distances up to 4 miles (6.4 km) at 2400 bps over 24 AWG wire.
- Speeds up to 19.2 kbps.
- Standalone and card versions.

The SHM-B Async is an asynchronous, full-duplex, 4-wire line driver/receiver that, when paired with another SHM-B Async, enables two EIA-232 devices to communicate at distances of up to 4 miles (at 2400 bps) over 24 AWG wire and at data speeds of up to 19.2 kbps.

In addition to the transmitter and receiver circuits, the SHM-B Async includes EIA-232 control line interfaces, status monitor LEDs, and a loopback switch.

The SHM-B Async is available in five versions:

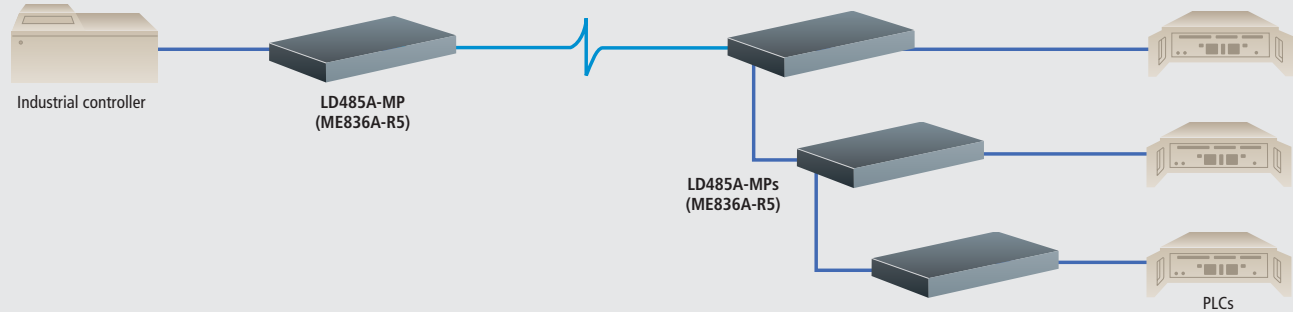
- As a standalone 115-VAC model (ME800A).
- As a standalone 115-VAC model with cables included (ME800A-R3).
- As a standalone 230-VAC model with cables included (ME800AE-CABPAK).
- As a rackmount card version (ME805-C).
- As a rackmount card version with cables included (ME805C-R3).

The SHM-B is designed to operate over a 4-wire metallic circuit, and it works best when used with twisted-pair cable. However, you can use most types of twisted-pair cable, often with little or no performance degradation.

It's also designed for maximum operator safety—there are no voltages greater than 12 VDC or 16 VAC present on the circuit board of the unit. Receive lines are protected from potential ground differences through optical isolators rated at 1500 volts.



*A typical application in which multiple LD485A-MPs are used for 4-wire, multipoint communications.*



### High-Speed Short-Haul Modem-B (SHM-B) Async

- Powered, point-to-point, 4-wire.
- Speeds up to 115.2 kbps.
- Ideal for applications where data speed is crucial.
- Uses two unshielded twisted pairs.
- Includes optical isolation to protect against surge damage.
- Switch-selectable for DTE or DCE equipment.
- Available in both standalone and rackmount card versions.

With a pair of High-Speed SHM-B Async units, two RS-232 devices can communicate at speeds of up to 115.2 kbps!

Data travels at this rate when the SHMs are configured for 1.5-mile (2.4-km) distances. To get the greatest distance—up to 4 miles (6.4 km) over 24 AWG wiring—set them to operate at 2400-bps speeds.

Along with transmitter and receiver circuits, the High-Speed SHM-B Async includes EIA-232 control-line interfaces, status monitor LEDs, and a loopback switch. The High-Speed SHM-B Async is available in both standalone versions (ME802A or ME802A-R3) and a rackmount card version (ME802C).

Use these SHMs with 4-wire metallic circuits, with twisted-pair cable offering the best performance. And although you can use most types of twisted-pair cable, to achieve maximum performance, we recommend that you use CAT4 or CAT5 UTP cable.

Because there are no voltages greater than  $\pm 9$  VDC or 17 VAC present on the circuit board of the High-Speed SHM-B Async, it offers maximum operator safety. Receive lines are protected from potential ground differences through optical isolators rated at 2500 volts.

Plus, the SHM offers easy installation. Because it's switch-selectable for either DTE or DCE equipment, you won't need any special cross-pinned cables; it works with the modular RJ cable that's already installed in your building.

### RS-232/RS-485 Multipoint Line Driver (LD485A-MP)

- Powered, point-to-point or multipoint, 2- or 4-wire.
- Provides high-speed service (64 kbps) for large multipoint installations (up to 64 drops).
- Works with any DTE that can be polled, regardless of the DTE's RTS support.
- User-selectable port-timeout feature automatically disables a port once it finishes transmission.
- Operates in 2-wire half-duplex or 4-wire full-duplex mode.
- Maximum distances of 4 miles (6.4 km) at 1200 bps over 24 AWG wire.

Here's the ideal line driver for multipoint installations where you want to link many terminals—each with its own line driver—to a computer via one master line driver. Use it, for instance, in high-speed and polling applications. Depending on the operating environment, as many as 64 devices can be linked together using twisted-pair cable.

You can also use the RS-232/RS-485 Multipoint Line Driver in point-to-point installations until you upgrade to a multipoint environment.

And it operates as an RS-232 to RS-485 interface converter, enabling an RS-232 device to transmit data over much longer distances than is normally possible (up to 4 miles at 1200 bps). Although it's designed specifically to connect to other RS-232/RS-485 Multipoint Line Drivers, you can connect the RS-485 port to any device with an RS-422 or RS-485 interface. Connect, for instance, RS-485 and RS-422 devices to the same LD485A-MP in an industrial application.

The line driver also features a manual loopback test, so you can check the system wiring for both the RS-232 and RS-485 interfaces. In addition, transient protection on the RS-485 interface helps prevent damage from voltage transients on the data line.



ME790A-M

Special circuitry within the driver lets it work with any DTE that can be polled, regardless of the DTE's RTS support, so you get total compatibility with your DTE hardware.

The RS-232/RS-485 Multipoint Line Driver can be jumpered for a user-selectable port timeout. After the last character is sent from one of the ports and a specified period of time passes, the line driver disables any transmission from that port. This way, a single port won't monopolize your network.

## TECH SPECS

### All Models:

Protocol: Asynchronous

### Microdriver 9

(ME790A-M, ME790A-F, ME792A-MSP, ME792A-FSP, ME794A-M, ME1794A-F, ME1791A-F)

**Distance (Maximum)** — 24 AWG: 17 mi. (27.4 km) at 1200 bps

**Operation** — 4-wire full-duplex, point-to-point

**Speed (Maximum)** — 19.2 kbps

**Interface** — RS-232

### Connectors —

ME790A-M, ME792A-MSP: (1) DB9 M, (1) RJ-11 F;

ME790A-F, ME792A-FSP: (1) DB9 F, (1) RJ-11 F;

ME794A-M: (1) DB9 M, (1) RJ-45 F;

ME1794A-F: (1) DB9 F, (1) RJ-45 F;

ME1791A-F: (1) DB9 F, (1) 5-screw terminal block

**Power** — From the RS-232 interface

**Size** — 1.2"H x 0.75"W x 2.5"D (3 x 1.9 x 6.4 cm)

**Weight** — 0.6 lb. (0.3 kg)

### SHM-B 2W-A

(ME755A, ME755AE, ME755-C)

**Distance (Maximum)** — 24 AWG: 2.3 mi. (3.7 km) at 2400 bps

**Operation** — 2-wire full-duplex, point-to-point

**Speed (Maximum)** — 19.2 kbps

**Interface** — RS-232

**Connectors** — (1) DB25 F, (1) 2-screw terminal block

### Power —

ME755A: External 115 VAC, 60 Hz;

ME755AE: External 230 VAC, 50 Hz;

ME755-C: From the ME810 or RM007 rack

**Size** — Standalone: 1.5"H x 4.3"W x 4.5"D (3.8 x 10.9 x 11.4 cm)

**Weight** — Standalone: 1.3 lb. (0.6 kg)

You can order the RS-232/RS-485 Multipoint Line Driver in standalone 115-VAC (ME836A-R5), standalone 230-VAC (ME836AE-R3), and rackmount card (ME836C-R5) versions. Cables are included with the 115-VAC standalone model and the rackmount card model.

### SHM-B Async

(ME800A, ME800A-R3, ME800AE-CABPAK, ME805-C, ME805C-R3)

**Distance (Maximum)** — 24 AWG: 4 mi. (6.4 km) at 2400 bps

**Operation** — 4-wire full-duplex, point-to-point

**Speed (Maximum)** — 19.2 kbps

**Interface** — RS-232

**Connectors** — (1) DB25 F, (1) 4-screw terminal block

**Power** — ME800A, ME800A-R3: External 115 VAC, 60 Hz  $\pm$  10%, 5 watts;

ME800AE-CABPAK: Primary: 230 VAC  $\pm$  10%, 50–60 Hz;

Secondary: 17 VAC, 700 mA;

ME805-C, ME805C-R3: From the ME810 or RM007 rack

**Size** — Standalone: 1.5"H x 4.3"W x 4.5"D (3.8 x 10.9 x 11.4 cm)

**Weight** — Standalone: 1.3 lb. (0.6 kg)

### High-Speed SHM-B Async (ME802A, ME802A-R3, ME802C)

**Distance (Maximum)** — 24 AWG: 4 mi. (6.4 km) at 2400 bps

**Operation** — 4-wire full-duplex, point-to-point

**Speed (Maximum)** — 115.2 kbps

**Interface** — RS-232

**Connectors** — (1) DB25 F, (1) 4-screw terminal block

**Power** — ME802A, ME802A-R3: External 115 VAC, 60 Hz;

ME802C: From the ME810 or RM007 rack

**Size** — Standalone: 1.5"H x 4.4"W x 4.1"D (3.8 x 11.2 x 10.4 cm)

**Weight** — Standalone: 2 lb. (0.9 kg)

### RS-232/RS-485 Multipoint Line Driver (ME836A-R5, ME836AE-R3, ME836C-R5)

**Distance (Maximum)** — 24 AWG: 4 mi. (6.4 km) at 1200 bps

**Operation** — 4-wire full-duplex, 2-wire half-duplex, point-to-point or multipoint

**Speed (Maximum)** — 64 kbps

**Interface** — RS-232 or RS-485

**Connectors** — (1) DB25 F, (1) 4-screw terminal block (RS-485)

**Power** — ME836A-R5: External 115 VAC, 60 Hz;

ME836AE-R3: External 230 VAC, 50 Hz;

ME836C-R5: From the RM005 rack

**Size** — Standalone: 1.8"H x 5.5"W x 8.5"D (4.6 x 14 x 21.6 cm)

**Weight** — Standalone: 1.8 lb. (0.8 kg)



ME800A

### Quick Reference Guide

Item	Powered/ Nonpowered	Multipoint	2-wire	4-wire or 5-wire*	Full duplex	Half- duplex	To 19.2 kbps	To 64 kbps	To 115.2 kbps	Power
ME790A-M, 790A-F	Nonpowered				✓	✓	✓			RS-232 interface, DCE mode: Pins 3, 4, 7
ME792A-MSP, 792A-FSP	Nonpowered			✓	✓	✓	✓			RS-232 interface, DCE mode: Pins 3, 4, 7
ME794A-M, 1794A-F	Nonpowered			✓	✓	✓	✓			RS-232 interface, DCE mode: Pins 3, 4, 7
ME1791A-F	Nonpowered			✓	✓	✓	✓			RS-232 interface, DCE mode: Pins 3, 4, 7
ME755A	Powered		✓		✓		✓			115 VAC, 60 Hz
ME755AE	Powered		✓		✓		✓			230 VAC, 50 Hz
ME755-C	Powered		✓		✓		✓			From the ME810 or RM007 rack
ME800A, 800A-R3	Powered			✓	✓		✓			115 VAC, 60 Hz
ME800AE-CABPAK	Powered			✓	✓		✓			230 VAC, 50 Hz
ME805-C, 805C-R3	Powered			✓	✓		✓			From the ME810 or RM007 rack
ME802A, 802A-R3	Powered			✓	✓		✓	✓	✓	115 VAC, 60 Hz
ME802C	Powered			✓	✓		✓	✓	✓	From the ME810 or RM007 rack
ME836A-R5	Powered	✓	✓	✓	✓	✓	✓	✓		115 VAC, 60 Hz
ME836AE-R3	Powered	✓	✓	✓	✓	✓	✓	✓		230 VAC, 50 Hz
ME836C-R5	Powered	✓	✓	✓	✓	✓	✓	✓		From the RM005 rack

\*Models with 5-wire terminal blocks use one wire for ground.

Item	Code
Microdriver 9 RJ-11 Male	<b>ME790A-M</b>
Female	<b>ME790A-F</b>
Microdriver 9 RJ-11 with Surge Protection Male	<b>ME792A-MSP</b>
Female	<b>ME792A-FSP</b>
Microdriver 9 RJ-45 Male	<b>ME794A-M</b>
Female	<b>ME1794A-F</b>
Microdriver 9 5-Screw Terminal Block Female	<b>ME1791A-F</b>
Short-Haul Modem-B (SHM-B) 2W-A Standalone (115-VAC)	<b>ME755A</b>
Standalone (230-VAC)	<b>ME755AE</b>
Rackmount Card	<b>ME755-C</b>
Short-Haul Modem-B (SHM-B) Async Standalone (115-VAC)	<b>ME800A</b>
Standalone (115-VAC) with Cables	<b>ME800A-R3</b>
<i>(ME800A-R3 includes [1] power supply, [1] 6-foot RS-232 DB25 male/DB9 female cable, and [1] DB25 female/DB9 male adapter.)</i>	

Item	Code
Short-Haul Modem-B (SHM-B) Async (Continued) Standalone (230-VAC)	<b>ME800AE-CABPAK</b>
with Cables	<b>ME805-C</b>
Rackmount Card	<b>ME805C-R3</b>
Rackmount Card with Cables	<b>ME805C-R3</b>
<i>(ME805C-R3 includes [1] power supply, [1] 6-foot RS-232 DB25 male/DB9 female cable, and [1] DB25 female/DB9 male adapter.)</i>	
High-Speed Short-Haul Modem-B (SHM-B) Async Standalone (115-VAC)	<b>ME802A</b>
Standalone (115-VAC) with Cables	<b>ME802A-R3</b>
Rackmount Card	<b>ME802C</b>
<i>(ME802A-R3 includes [1] power supply, [1] 6-foot RS-232 DB25 male/DB9 female cable, and [1] DB9 female/DB9 male adapter.)</i>	
<b>For all card versions above, you'll need a rack...</b>	
Short Haul Modem-B Rack (16-Card)	<b>ME810</b>
Short Haul Modem-B Desktop Rack (8-Card)	<b>RM007</b>
RS-232/RS-485 Multipoint Line Driver (LD485A-MP) Standalone (115-VAC) with Cables	<b>ME836A-R5</b>
Standalone (230-VAC)	<b>ME836AE-R3</b>
Rackmount Card with Cables	<b>ME836C-R5</b>
<i>(ME836A-R5 and ME836C-R5 include [1] 6-foot RS-232 DB25 male to DB25 female cable and [1] DB9 female to DB25 male adapter.)</i>	
<b>For your ME836C-R5 cards, you'll need a...</b>	
Multi-Function Rack (16-Card)	<b>RM005</b>